

### AMENDMENTS TO THE CLAIMS:

Claims 70-79, 92-94, 123, 124 and 127-139 are pending. Claims 73, 74, 76 and 127 are amended herein. Claim 139 is added herein. This listing of claims will replace all prior versions, and listings of claims, in the application.

### LISTING OF CLAIMS:

Claims 1-69 are cancelled.

70. (Previously presented) An array of nucleic acid probes, wherein:  
each probe has a double-stranded portion; a terminal single-stranded portion; and a random nucleotide sequence within the single-stranded portion, wherein the random sequence is not at the 5'-terminus or the 3'-terminus.

71. (Cancelled)

72. (Previously presented) The array of claim 70, wherein the double-stranded portion is between about 3-20 nucleotides and the single-stranded portion is between about 3-20 nucleotides.

73. (Currently amended) The array of claim 70, wherein the probes are fixed to ~~the solid~~ a solid support by conjugating to a coupling agent selected from the group consisting of antibody/antigen, biotin/streptavidin, *Staphylococcus aureus* protein A/IgG antibody F<sub>c</sub> fragment, nucleic acid/nucleic acid binding protein, and streptavidin/protein A chimeras.

74. (Currently amended) An array of nucleic acid probes, wherein each probe comprises:

a single-stranded first nucleic acid of about 15-25 nucleotides in length;  
a longer single-stranded second nucleic acid of about 20-30 nucleotides in length, comprising a nucleotide sequence complementary to the first nucleic acid and a random terminal nucleotide sequence of between about 3-10 nucleotides in length; and  
an oligonucleotide of about 4-20 nucleotides in length, comprising a random nucleotide sequence, wherein:

the first nucleic acid is hybridized to the second nucleic acid to form a hybrid having a double-stranded portion and a single-stranded portion comprising the random terminal nucleotide sequence of between about 3-10 nucleotides in length; and

the oligonucleotide is ligated to the random nucleotide sequence of the second nucleic acid.

75. (Previously presented) The array of claim 74, wherein the nucleic acids in the array are fixed to a solid support selected from the group consisting of plastics, ceramics, metals, resins, gels, membranes, and chips.

76. (Currently amended) The array of ~~claim 74~~ claim 75, wherein the solid support is a two-dimensional or a three-dimensional matrix with multiple probe binding sites.

77. (Previously Presented) The array of claim 70, wherein the probes are labelled with a detectable label.

78. (Previously Presented) The array of claim 77, wherein the detectable label is selected from the group consisting of a radioisotope, a stable isotope, an enzyme, an antibody, a fluorescent chemical, a luminescent chemical, a chromatic chemical, and a metal.

79. (Previously Presented) The array of claim 70, wherein the nucleic acids are DNA, RNA, Protein Nucleic Acid (PNA), or a combination thereof.

Claims 80-91 are cancelled.

92. (Previously presented) The array of claim 74, wherein the probes are labelled with a detectable label.

93. (Previously presented) The array of claim 92, wherein the detectable label is selected from the group consisting of radioisotope, a stable isotope, an enzyme, an antibody, a fluorescent chemical, a luminescent chemical, a chromatic chemical, and a metal.

94. (Previously presented) The array of claim 74, wherein the nucleic acids are DNA, RNA, Protein Nucleic Acid (PNA), or a combination thereof.

Claims 95-122 are cancelled.

123. (Previously presented) The array of claim 74, wherein the probes are fixed to a solid support by conjugating to a coupling agent selected from the group consisting of antibody/antigen, biotin/streptavidin, *Staphylococcus aureus* protein A/IgG antibody F<sub>c</sub> fragment, nucleic acid/nucleic acid binding protein, and streptavidin/protein A chimeras.

124. (Previously presented) The array of claim 74, wherein the random region is of length R and the array comprises about 4<sup>R</sup> different nucleic acid probes.

Claims 125 and 126 are cancelled.

127. (Currently amended) An array of nucleic acid probes, wherein each probe comprises a single-stranded portion at one terminus, a double-stranded portion at the opposite terminus, and a variable nucleotide sequence within the single-stranded portion, wherein the probes are divided into four subsets, wherein for each subset, ~~one of the four a~~ nucleic acid base ~~bases~~ is selected and occupies a defined number of positions in each probe and all other bases except the selected base occupy the remaining positions.

128. (Previously presented) The array of claim 138, wherein the coupling agent is selected from the group consisting of antibody/antigen, biotin/streptavidin, *Staphylococcus aureus* protein A/IgG antibody F<sub>c</sub> fragment, nucleic acid/nucleic acid binding protein, and streptavidin/protein A chimeras.

129. (Previously Presented) The array of claim 127, wherein the probes are labelled with a detectable label.

130. (Previously Presented) The array of claim 129, wherein the detectable label is selected from the group consisting of a radioisotope, a stable isotope, an enzyme, an antibody, a fluorescent chemical, a luminescent chemical, a chromatic chemical, and a metal.

131. (Previously Presented) The array of claim 127, wherein the nucleic acids are DNA, RNA, Protein Nucleic Acid (PNA), or a combination thereof.

132. (Previously Presented) The array of claim ~~127~~ 139, wherein the solid support is selected from the group consisting of plastics, ceramics, metals, resins, gels, membranes, and chips.

133. (Previously Presented) The array of claim ~~127~~ 139, wherein the solid support is a two-dimensional or a three-dimensional matrix with multiple probe binding sites.

134. (Cancelled)

135. (Previously presented) The array of claim 127, wherein the non-fixed positions of the probes are occupied by a base analog.

136. (Previously presented) The array of claim 74, wherein the double-stranded portion of each probe includes an enzyme recognition site.

137. (Previously presented) The array of claim 127, wherein the nucleic acids in the array are fixed to a solid support.

138. (Previously presented) The array of claim 127, wherein the probes are fixed to a solid support by conjugating to a coupling agent.

139. (New) The array of claim 127, wherein the probes of the array are fixed to a solid support.